

III. AFFECTED ENVIRONMENT

A. INTRODUCTION

The area covered by this analysis is within the jurisdiction of the Rawlins and the Rock Springs Field Offices, Wyoming BLM. It is bordered on the south by the Colorado state line, on the east by Wyoming Highway 789, on the north by Interstate Highway 80, and on the west by the Flaming Gorge Reservoir. As shown in Table 1, over two and one half million acres of public and private lands are included in this analysis. Potential areas to be affected by wild horse management decisions equal 45% of all public lands within the RFO and 57% within the RSFO. Map 1 portrays the analysis area. The Adobe Town HMA contains all or portions of 14 grazing allotments. Thirteen are within the Rawlins Field office and a portion of the Rock Springs Allotment is within the Rock Springs Field office. The Adobe Town WSA is entirely within the Adobe Town HMA. The Salt Wells Creek HMA contains all or portions of 8 grazing allotments within the Rock Springs Field office.

TABLE 2

TABLE 2a ADOBE TOWN and SALT WELLS CREEK HORSE MANAGEMENT AREAS
RAWLINS GRAZING ALLOTMENTS IN THE ADOBE TOWN HMA

ALLOTMENT NAME	PUBLIC ACRES	STATE ACRES	PRIVATE ACRES	TOTAL ACRES
Willow Creek	73,622	836	1,098	75,557
Continental	24,810	2	40	24,852
Red Creek	32,476		206	32,682
Sand Creek	29,922			29,922
Rotten Springs	20,991	38		21,030
Grindstone Springs	8,486	80		8,566
Adobe Town	30,886	371		31,257
Powder Mountain	8,078	717	1,027	9,822
Little Powder Mountain	16,105	824	289	17,219
Crooked Wash	7,199	141		7,340
Hiawatha Tri-District*				
Maneotis Crooked Wash	7,700	644	41	8,386
Cow Creek	62,751	2,135	1,367	66,254
Espitalier	23,713	347	684	24,745
Sub-Total	346,739	6,135	4,755	357,632

TABLE 2b ROCK SPRINGS GRAZING ALLOTMENTS IN THE ADOBE TOWN HMA

ROCK SPRINGS *				
	73,715.49	1,278.423	15,641.784	90,635.700
TOTAL	73,715.49	1,278.423	15,641.784	90,635.700
TOTAL FOR HMA	417,766.3	7,419.495	20,396.315	448,274.740

TABLE 2c ROCK SPRINGS GRAZING ALLOTMENTS IN THE SALT WELLS CREEK HMA

ALLOTMENT NAME	PUBLIC ACRES	STATE ACRES	PRIVATE ACRES	TOTAL ACRES
Rock Springs **	770,644	42,500	462,405	1,275,549
Circle Springs	8,875	1,200	12,226	22,301
Rife	21,783		22,960	44,743
Vermillion Creek	139,551	7,618	2,024	149,193
Crooked Wash	10,953	150	40	11,143
Horseshoe Wash	7,086	468	109	7,663
Salt Wells Creek	43,075	8,140	1,980	53,195
Sub-Total	1,001,967	60,076	501,744	1,563,787

TABLE 2d RAWLINS GRAZING ALLOTMENTS IN THE SALT WELLS CREEK HMA

Corson Springs	13,862	1,280	40	15,182
TOTAL FOR SALT WELLS CREEK HMA	1,015,829	61,356	501,784	1,578,969

AFFECTED ROCK SPRINGS ALLOTMENTS OUTSIDE OF THE HMAs

Rock Springs **
Pine Mountain
Red Creek
Sugar Loaf
Spring Creek
Mellor Mountain

** NOTE: This allotment is large and extensive and includes land not included in the HMA

AFFECTED RAWLINS ALLOTMENTS OUTSIDE OF THE HMAs (This area is also known as I80 South)

South LaCleda
Mexican Flats
Mexican Graves
Powder Rim
North Barrel
Cherokee Trail
North LaCleda
South Flat Top
Tipton
South Barrel

B. WILDLIFE

Wildlife General

A variety of wildlife species occur, or have the potential to occur, in the project area including mule deer, pronghorn, elk, moose, coyote, red fox, bobcat, desert cottontail, Wyoming ground-squirrel, horned lark, raven, magpie, and common nighthawk.

Big Game Species

Mule Deer

The Wyoming Game and Fish Department's (WGFD) South Rock Springs and Baggs herd units lie within the project area. Mule deer utilize the project area year-round, and approximately 15% of the project area is identified a crucial winter range for deer.

Pronghorn

The WGFD South Rock Springs and Bitter Creek herd units lie within the project area. Antelope utilize the upland portion of the project area year-round, and approximately 20% of the project area is identified as crucial winter range for pronghorn.

Elk

The WGFD South Rock Springs and Petition herd units lay within the project area. Elk utilize the project area year round, and approximately 2% of the project area is identified as crucial winter range for elk.

Moose

Moose are infrequently sighted in the project area, primarily near the limited riparian areas.

Threatened, Endangered, Proposed and Candidate Species

Three federally designated threatened, endangered, proposed, or candidate animal species and one plant species may be present or have the potential to be present within the project area.

Colorado River fish species must also be considered in this analysis, as perennial streams within the project area contribute to the Green River drainage (USFWS letter of March 15, 2004). However, as there are no depletions associated with the project, this analysis is brief.

The status of all potentially affected federally designated species with regard to the

project is summarized below.

The Colorado River and North Platte River Specie, Preble's Meadow Jumping Mouse, Western Boreal and Wyoming Toads are not located, or habitats are not found, within the project area. There will be no effect on these species as a result of implementing this project.

<u>Species</u>	<u>Status</u>	<u>Habitat Types in Project Area</u>
Bald eagle	Threatened	No suitable nesting, roosting habitat
Black-footed ferret	Endangered	White-tailed prairie dog towns >200 acres in size Cottonwood/willow riparian habitat west of the Continental Divide
Yellow-billed cuckoo	Candidate	
Ute ladies'-tresses	Threatened	Moist soils in mesic or wet meadows near springs, seeps, and riparian habitat between 4300' and 7000' ASL.
Gray Wolf	Experimental	
Canada Lynx	Threatened	Riparian areas used for travel corridors

Bald Eagle

Bald eagles are infrequently sighted near the project area during spring migration to nesting areas. No bald eagles have been recorded nesting or roosting in the project area as perennial water is limited.

Black-footed Ferret

Potential ferret habitat exists in the project area. Surveys conducted in relation to other development activities in the Salt Wells Creek HMA have not recorded black-footed ferret. Trap sites and staging areas associated with this project will not be placed in prairie dog towns

Ute ladies'-tresses

Potential habitat may exist in the project area; however project activities will not take place in suitable riparian habitat for this species.

Gray Wolf

The Gray Wolf is an experimental population throughout the project area. One known location of a lone wolf was reported by WGFD personnel in 2002 north of the gather area. This wolf has not been seen since and is believed to have been a young animal, most likely dispersing and looking for a new home range. There have also been sightings of wolves in the Red Desert and near Granger.

The BLM has determined that the proposed action is not likely to jeopardize the continued existence of the species. The Rocky Mountain population of Gray Wolf is listed as a "Non-essential Experimental Population". This species will not be given further consideration in this analysis.

Canada Lynx

Canada Lynx have the potential to travel through the area from one Lynx Analysis Unit (LAU) to another. Generally, they will use riparian habitat in open spaces, however, project activities will not take place in riparian habitats.

Sensitive Species Wildlife

A number of animal species potentially present in the project area have been accorded "sensitive species" status (IM-2001-040). Sensitive mammal species that have the potential to occur, or that may have habitat located within the project area include the Wyoming pocket gopher, pygmy rabbit, swift fox, dwarf shrew, spotted bat, long-eared myotis, fringed myotis, Townsend's big-eared bat, and white-tailed prairie dog.

Sensitive bird species that have the potential to occur in the area, or may have habitat located within the area include the: ferruginous hawk, mountain plover, peregrine falcon, greater sage-grouse, long-billed curlew, burrowing owl, sage thrasher, loggerhead shrike, Brewer's sparrow, sage sparrow, and Baird's sparrow.

Other sensitive species that have the potential to occur in the area, or may have habitat located within the area include the: midget faded rattlesnake and Great Basin spadefoot. Fish species include the roundtail chub, leatherside chub, blue head sucker, and flannel mouth sucker.

BLM records indicate that there are approximately 4 greater sage-grouse leks and/or associated nesting habitat within or adjacent to the Adobe Town HMA, and approximately 30 greater sage-grouse leks and/or associated nesting habitat within or adjacent to the Salt Wells Creek HMA.

Mountain plover have been recorded in the project area, and potential mountain plover breeding/nesting habitat exists throughout the Adobe Town and Salt Wells Creek HMAs.

C. CULTURAL, HISTORIC RESOURCES

Site types typically encountered in the HMAs include prehistoric open camps, prehistoric lithic scatters, stone circle sites, rock alignments, rock art, historic period trash associated with the ranching industry, historic period trails (Overland and Cherokee) and roads (including the Lincoln Highway, historic mines, and historic railroad sites. Cultural resource studies to support wild horse capture will follow the Wyoming State Protocol for the BLM's National Programmatic Agreement.

For the purposes of consultation under Section 106 of the National Historic Preservation Act of 1966 an undertaking is any activity which is funded in whole or in part by the Federal Government or is under a Federal approval. Under the Wyoming State Protocol Agreement implementing Section 106 consultation for the Bureau of Land Management in Wyoming, animal traps and corrals which are used less than three days have been consulted upon programmatically. Coordination between the Wild Horse program and the cultural program is key to assuring that known areas of cultural importance are not impacted.

For locations where use for more than three days is anticipated or the proposed activity is something other than a trap or corral, the field office cultural resource specialist will determine the appropriate cultural resource studies to be undertaken. In most cases this would consist of a visit to the proposed location to determine if cultural resources would be impacted and if so, a recommendation to relocate the proposed activity in order to avoid potential impacts to cultural resources.

Many of the above kinds of resources within the analysis area are of cultural importance to Native American Tribes. Wild horse gathering related traps, corrals, and features will not be placed within or immediately adjacent to any of these sites without first completing consultations with the affected Tribes as per BLM Handbook H-8160-1.

D. WILD HORSES

HMA Descriptions

As discussed in the Background Information (EA-Page One), the Adobe Town HMA is located approximately 20 miles west of Baggs, within Carbon and Sweetwater Counties, Wyoming. The Adobe Town HMA is approximately 448,000 acres in size. The Salt Wells Creek HMA is located directly southeast of Rock Springs, within Sweetwater County, Wyoming. The Salt Wells Creek HMA is approximately 1,193,000 acres in size of which 725,704 acres are public and the remaining acres are private. The majority of the private land holdings in the Salt Wells Creek HMA are in a checker board land pattern with every other section alternating between public and private. Elevation ranges from 6,470 feet along Sand Creek Wash, to over 8,000 feet on Black's Butte. Summers are hot, and winters can range from mild to bitterly cold.

Annual precipitation ranges from less than 7 to more than 12 inches per year. About half of the precipitation falls during the growing season from April through June, with the remainder coming in high intensity summer thunderstorms. Much of the precipitation from summer thunderstorms runs off in numerous drainages. Some of this water is captured in reservoirs or pits, and is the primary source of water for wild horses, livestock, and wildlife.

Table 2 describes the grazing allotments the horses utilize in both the Adobe Town and Salt Wells Creek HMAs.

Gather History and Population Characteristics

The most recent gathers in the Adobe Town and Salt Wells Creek HMAs were conducted in 2003 and are reflected in Table 4.

Table 4 - Number of Wild Horses Gathered, Removed, and Remaining

Year	HMA	Number Gathered	Number Removed	Estimated Number Remaining (12/31/04)
2003	Salt Wells	305 (Spring)	305	
2003	Salt Wells	800 (summer)	783	480
2002	Adobe Town	210 (fall)	210	
2003	Adobe Town	859 (Summer)	859	1053

Detailed information regarding the color and other characteristics of the horses is found in the respective gather plans and HMAPs for the HMAs. A few interesting generalizations can be made. On the eastern edge of the Adobe Town HMA, gray is the dominant color, exceeding 40 % of the population. The dominance of gray gradually decreases toward the western edge of the Salt Wells Creek HMA. Likewise, the sex ratio changes with the Adobe Town population being approximately equal numbers of males and females while the percentage of males increases noticeably as one moves westward through the Salt Wells Creek HMA. Across the area, there is a noticeable difference in the representation of various age classes which can usually be correlated to harsher than normal winters which resulted in higher than average mortality amongst all animals and particularly amongst colts and fillies not yet one year old and thus experiencing their first winter.

The current wild horse population, prior to the 2005 foaling period, is estimated to be 1053 in the Adobe Town HMA and 480 horses in the **Salt Wells Creek** HMA. The total horse population following the 2005 foaling period is projected to be approximately 1200 in the Adobe Town HMA and 576 horses in the **Salt Wells Creek** HMA.

No predation of wild horses has been documented in the HMAs, and it is considered to have little or no effect on the wild horse population.

GENETIC RESOURCE

Based on recent genetic testing, the Adobe Town and the eastern Salt Wells Creek herds have demonstrated a high degree of similarity to the New World Iberian (Spanish Colonial) breeds and to each other. Dr's Gus Cothran and Phillip Sponenberg have been asked to evaluate these populations with respect to their qualification as a rare and unique genetic resource and to make additional (in addition to those listed below) management recommendations, in that regard. It is anticipated that those recommendations will address, among others, removal/retention criteria and fertility control. These recommendations would then be incorporated into the overall process that results in the herd specific criteria that are employed when removals such as the proposed action are conducted. The genetic diversity and viability of both herds is enhanced by their high degree of interaction with each other.

Genetic Diversity and Viability in the Adobe Town HMA

Blood samples were collected from horses removed during the 2003 gathers to develop genetic baseline data (e.g. genetic diversity, historical origins of the herd, unique genetic markers). The horses in the eastern part of the Salt Wells Creek HMA are known to intermingle with the horses in the Adobe Town HMA. The blood samples were analyzed by Dr. E. Gus Cothran, Department of Veterinary Science, University of Kentucky. His conclusions and recommendations regarding genetic diversity in the Adobe Town herd are partially summarized as follows:

"Genetic variation in the Adobe Town herd is fairly high. All measures are above the feral average. Allelic diversity is particularly high. The high number of variants suggests a herd of mixed origins which could include some Spanish breed ancestry. The pattern of variation is one often seen in populations that have been through a bottleneck,

however, the population size does not give an indication of a bottleneck. No action is needed (to maintain genetic variation). The AML for this herd is large and there should be no problems with maintenance of genetic variation."

Genetic Diversity and Viability in the Salt Wells Creek HMA

Blood samples were collected from horses removed during the 2003 gathers. The samples were collected from horses in both the western and the eastern parts of the Salt Wells Creek HMA. The horses in the eastern part of the Salt Wells Creek HMA are known to intermingle with the horses in the Adobe Town HMA. The samples were analyzed by Dr. E. Gus Cothran, Department of Veterinary Science, University of Kentucky. His conclusions and recommendations regarding genetic diversity in the Salt Wells Creek eastern and western herds are summarized as follows:

"Genetic variability of the Salt Wells Creek herd is high. The high variation is likely due to a mixed breed origin for the herds and high population size. The herds show no clear relationship to any domestic horse breed groups although highest similarity is to Iberian horse breeds followed by North American breeds. The two herds appear likely to have genetic interchange with each other. There also are differences in the two herds but these could be due to the small sample size." (Cothran, 2004)

"No action is needed. Genetic variation is high and the AML is high enough to prevent drastic loss of variation." (Cothran, 2004)

ADOBE TOWN HMA POPULATION HISTORY

The population within the Adobe Town HMA has been varied since records have been kept. The following table depicts the historic fluctuation.

TABLE 5

YEAR	NUMBER	NOTES	YEAR	NUMBER	NOTES
1983	909	Pre foal	1993	833	Pre foal
1984	708	Pre foal	1994	718	Pre foal
1985	675	Pre foal	1995	1366	Pre foal
1986	444	Pre foal	1996	1296	Pre foal
1987	650	Pre foal	1997	730	Pre foal
1988	606	Pre foal	1998	879	Pre foal
1989	691	Pre foal	1999	685	Pre foal
1990	771	Pre foal	2000	1500	Post foal
1991	417	Pre foal	2001	1740	Post foal
1992	625	Pre foal	2002	1310*	Post foal
			2003	839**	Post Foal
			2004	865#	Pre foal

*Estimated population after removals inside HMA and in Colorado. Actual inventory in September was 1800. In 2000, inventory timing was adjusted to reflect the reproductive success for the year.
**Estimated population after large removal in summer of 2003. #May estimate from February flights.

Adobe Town and Salt Wells Creek horses are part of the species at large as represented in the following table:

TABLE 6

	1971 POPULATION	AML	2004 EOY POP EST
BLM-WIDE	~17,000	~27,000	~37,800
WYOMING	<5,000	3,253	3,865
RAWLINS	1,235	920	1,600
ADOBE TOWN	600	700	1,053
ROCK SPRINGS	2,364	1,215	1'398
SALT WELLS	485	365	480

METAPOPULATIONS

From the standpoint of genetic viability, the required level of exchange of animals and the related introduction of new genetic material is not high. In small populations of less than 150 animals, the introduction of one or two competent, unrelated breeding animals per generation (approximately every 10 years) will ensure the maintenance of the genetic resource. Thus, to be members of the same metapopulation, individual animals need not experience frequent, large-scale contact with one another. See EA# 030-EA0-037 page 17-19 for a detailed description of metapopulations within the area. A recent report by Dr Gus Cothran showed that, in genetic terms, wild herds that had been sampled fell within the observed ranges of heterozygosity for domestic breeds.

POPULATION ESTIMATES AND AML EXPRESSION

Wild horse populations are as dynamic as any other wild animal population and perhaps even more so than some. The following factors effect the wild horse population and its fluctuations:

Age/Sex distribution-The ratio of males to females and their average age are the two most obvious subsets of this characteristic of a herd that can affect its rate of growth. EG, if a population is 50% female, it can't increase by more than 50% a year. Then if those females are all over 15 or under 2, the herd's ability to increase would be further restricted.

Natality-Or birth rate. This may be expressed as either a percentage of the total population or a percentage of the female segment of the population. In Adobe Town, most of the young (>85%) are born between May 10 and June 10.

Mortality-The number of animals or percentage of the population that dies of natural causes each year. This includes starvation, dehydration, predation, disease and injury. This is often defined for individual age classes but may be expressed as a percentage of the entire population. In a typical Rawlins or Rock Springs wild horse population, the adage is true that states, if this colt lives to be two, it will probably live to be twenty or even older. The highest mortality rates in these wild horse populations are for the young in their first winter. Then, of course, every horse, if left on the range will eventually succumb to the passage of time and die of old age.

Recruitment -The percentage of young that survive to maturity and enter the adult segment of the population. In Rawlins and Rock Springs, this generally equals the growth rate for the herd though technically, this isn't quite true.

Removals-Rounding up and removing part of the population has an obvious effect.

Growth Rate-The number that exists, plus the number born or introduced minus the number that die. For the Adobe Town population, the growth rate has averaged 16 percent over a thirty year period but this average has included years of near zero growth and years of growth near thirty percent.

The time of year has an effect on the total number of horses that will occupy the range. Thus, if the population is estimated in March, whatever the winter mortality would be has normally taken place and no colts have yet been born. So, if the population were estimated to be 1000 in March, it could well be 1250 in September, and 1160 the following March.

In Rawlins and Rock Springs, AMLs are expressed as the number of adults March (or pre-foaling/post winter mortality) population estimate. The AML is the mid point of the range identified as the lower limit and the upper limit. That range identifies the objective population sizes at minimum, maximum, and average within a three year cycle. So, if a population is estimated at 1000, then a gather scheduled for August would need to remove approximately 600 total animals to bring the population to approximately 650 total animals and include approximately 125 colts.

E. DOMESTIC LIVESTOCK

Domestic livestock are authorized to use the public lands under the authority of the Taylor Grazing Act, as amended. Livestock belonging to specific livestock operators are

authorized to use specific areas of rangeland (grazing allotments) for specified periods of time in specified numbers. Thirteen of the 588 grazing allotments in the Rawlins Field Office jurisdiction occur within the Adobe Town HMA. Eight of the 80 grazing allotments in the Rock Spring Field Office jurisdiction occur within the Salt Wells Creek HMA (See Table 2 and Table 8). In all cases, the grazing allotment and the authorization of livestock use predate passage of the Wild, Free-roaming Horse and Burro Act.

The rangelands in the HMAs provide seasonal grazing for livestock (cattle and sheep). Wherever domestic livestock are authorized to use the public lands, range improvements are present. Most of these range improvements are operated and maintained by the livestock operators, and they all affect wild horses. Fencing is primarily used to keep livestock in specific allotments during specified seasons of use. Livestock water is provided by springs, wells, intermittent and ephemeral streams, pipelines, and reservoirs. Sheep use snow in the winter as a water source. Sheep grazing in the HMAs is mostly within the winter period. Cattle grazing is about evenly distributed amongst the seasons. The overall decline in the range sheep industry has resulted in a low and variable rate of actual use by sheep operators. Cattle use levels have been fairly constant in recent years. The following table depicts the current status of livestock grazing in the HMAs. Some sheep operators have expressed interest in converting their idle sheep grazing use into active cattle grazing.

TABLE 8a ADOBE TOWN HMA LIVESTOCK PREFERENCE					
Grazing Allotment	Allot. #	Number of Operators	Active Preference (AUMs)	Type use	Seasons
ADOBE TOWN	10502	1	1820	Sheep	Winter
CONTINENTAL	10506	1	2830	Cattle	Summer
COW CREEK	10509	1	2629	Cattle	Summer
				Sheep	Winter
CROOKED WASH	10510	1	87	Cattle	Summer
ESPITALIER	10511	1	2775	Cattle	Summer
GRINDSTONE SPRINGS	10512	1	413	Sheep	Winter
LITTLE POWDER MOUNTAIN	10513	3	642	Cattle	Summer
			1341	Sheep	Fall, Spring
MANEOTIS CROOKED WASH	Administered by Craig, CO BLM (Hiawatha Tri-District)				
POWDER MOUNTAIN	10519	1	855	Cattle	Summer
				Sheep	Spring
RED CREEK	10521	1	2612	Cattle	Summer
				Sheep	Winter
ROTTEN SPRINGS	10523	3	622	Cattle	Spring
			145	Cattle	Summer
			661	Sheep	Winter
SAND CREEK	10524	1	2839	Sheep	Winter
				Cattle	Winter
WILLOW CREEK	10528	1	5362	Sheep	Winter
ROCK SPRINGS	Administered by Rock Springs BLM (see TABLE 8b below)				
TOTAL		19	25,001		

TABLE8b SALT WELLS CREEK HMA LIVESTOCK PREFERENCE

Grazing Allotment	Allot. #	Number of Operators	Active Preference (AUMs)	Type use	Seasons and Dates
ROCK SPRINGS#	13018	22	108,093	Cattle And Sheep	Yearlong
CIRCLE SPRINGS	04001	1	946	Sheep Cattle	Summer Yearlong
RIFE	04002	1	508	Cattle	Spring-S-fall
VERMILION CREEK	04003	3	12,140	Cattle Sheep	Spring-S-fall Winter
HORSESHOE WASH	04006	1	607	Cattle Cattle Sheep	Spring Winter Winter
SALT WELLS	20507	1	1,189	Cattle	Summer-fall
CORSON SPRINGS	04009	2	2,618	Cattle	Summer-fall

Part of this allotment is in the Adobe Town HMA and part of it is in the Salt Wells Creek HMA

F. VEGETATION AND SOILS

Vegetation General

There are a variety of vegetation types in the Rawlins and Rock Springs Field Office areas where wild horses can be found, both within and outside of wild horse HMAs. Vegetation types include: sagebrush, sagebrush/grass, saltbush, greasewood, desert shrub, juniper, grass, meadow, broadleaf trees, conifer, mountain shrub, half shrub and perennial forbs, and badlands. The predominant vegetation type is sagebrush/grass.

Plant communities are very diverse in this large area, reflecting the diversity in soils, topography, and geology found there. The high-elevation, cold-desert vegetation of the project area is composed predominately of Wyoming big sagebrush/grass and Gardner saltbush vegetation communities. Other plant communities present are: desert shrub, grassland, mountain shrub, juniper woodlands, and a very few aspen woodlands. Needle-and-thread, Indian ricegrass, bluebunch wheatgrass, western wheatgrass, junegrass, basin wild rye, sandhill muhly, Canby and little bluegrass, and threadleaf sedge are the predominant grasses and grass-like species. Wyoming big sagebrush, black sagebrush, bud sage, birdsfoot sage, Gardner's saltbush, spiny hopsage, four-wing salt bush, greasewood, bitterbrush, winterfat, horsebrush, Douglas and rubber rabbitbrush, and true mountain mahogany are important shrub species. Forbs are common and variable depending on the range site and precipitation zone.

Wild horses generally prefer perennial grass species as forage. Shrubs are more important during the fall and winter. The species of grasses preferred depends on the season of the year. Needle and thread and Indianricegrass are most important during the winter and spring and wheatgrasses during the summer and fall.

Soils-General

The soils in the HMAs are highly variable in depth and texture as would be expected when one pictures the great variability in geology and topography that characterizes the area. Generally, the eastern third is a mix of sandy soils with high wind erosion potential and clayey soils with high water erosion potential, low bearing strength and varying amounts of salts. The western third has more loamy inclusions in the form of undulating uplands and alluvial complexes, with moderate erosion potential, while the middle third is a mixture of both. Virtually any soil condition that may be encountered in the region can be found somewhere within the HMAs. More specific soils information can be found in the draft soil surveys located in the BLM files in the Rawlins and Rock Springs Field Offices.

Special Status Plants

Special status plants are those species that are federally listed as threatened or endangered, proposed for listing, or candidates for listing under the Endangered Species Act (ESA). They also include species designated by each BLM State Director as sensitive and those listed or proposed for listing by a state in a category implying potential endangerment or extinction. BLM is mandated to protect and manage threatened, endangered, candidate, proposed, and sensitive species and their habitats. The federally listed Ute ladies'-tresses has habitat in the area but surveys throughout the area have not found any populations. It occurs in riparian areas below 7,000 feet. The Wyoming special status plant species that grow, or have potential habitat in the project area are listed in the following table. The Colorado butterfly plant and blowout penstemon plant are not located within, or habitat is not found, in the project area. There will be no effect to these species as a result of implementing this project.

Wyoming Special Status Plant Species

Common Name	Scientific Name	Habitat
Nelson's milkvetch	<i>Astragalus nelsonianus</i>	Alkaline clay flats, shale bluffs and gullies, pebbly slopes, and volcanic cinders in sparsely vegetated sagebrush, juniper, & cushion plant communities at 5200 - 7600'
Cedar Rim thistle	<i>Cirsium aridum</i>	Barren, chalky hills, gravelly slopes, & fine textured, sandy-shaley draws at 6,700 - 7,200'
Ownbey's thistle	<i>Cirsium ownbeyi</i>	Sparsely vegetated shaley slopes in sage & juniper communities at 6,440 - 8,400'
Gibbens' penstemon	<i>Penstemon gibbensii</i>	Sparsely vegetated shale or sandy-clay slopes at 5,500-7,700'

Weeds

Federal agencies are directed by Executive Order 13112, Invasive Species, to expand and coordinate efforts to prevent the introduction and spread of invasive plant species (noxious weeds) and to minimize the economic, ecological, and human health impacts that invasive species cause. Weed populations are generally found along main dirt roads and two-tracks, in areas of livestock concentration, and in areas of intense recreational use. Motorized vehicles transporting seeds can be a major source of new infestations of weed species. The majority of the area has not been surveyed for noxious weeds. Noxious weed and other invasive species known to occur in the area include: Russian knapweed, hoary cress, houndstongue, Canada thistle, saltcedar, henbane, halogeton, Russian thistle, gumweed, goosefoot, and assorted mustards.

G. RECREATION

The public enjoys seeing wild horses roaming free in the Rawlins and Rock Springs Field Office areas. Some people make special trips to see wild and free-roaming horses. This is especially true of nonresidents and of residents taking nonresident visitors out to see wild horses. Although demand is not high, some members of the public enjoy seeing wild horses roaming free. Both residents and nonresidents occasionally make special trips to the RFO and RSFO to view wild horses in their natural environment. One outfitter is permitted by BLM to conduct tours of the HMA. Other recreation in the HMA is quite dispersed with the greatest amount occurring during the hunting seasons for the various game animals and birds. Primary recreational activities in the area include: hunting for pronghorn antelope, mule deer, upland game birds, coyotes, and small game; camping,

hiking, rock hounding, photography, wildlife and wild horse viewing, off highway vehicle (OHV) use and sightseeing.

H. WILDERNESS

Adobe Town Wilderness Study Area (WSA), encompassing 85,710 acres between the Rawlins and Rock Springs Field Offices, lies within the HMA. Until it is designated wilderness or released from further consideration by Congress, it is managed under the Interim Management Policy (IMP) for lands under wilderness review. Wild horses are considered an important attribute of the Adobe Town WSA. Under the IMP, WSAs are managed to preserve their wilderness character (naturalness, solitude, and opportunities for primitive recreation) and suitability for designation as wilderness.

Fundamental to this preservation is prohibition of new surface disturbance or permanent structures so that the WSA retains the character of an area untrammelled by man. If designated wilderness, the WSA would be managed in accordance with the Wilderness Act of 1964.

I. RIPARIAN AREAS (AND OTHER SURFACE WATER RESOURCES)

Riparian areas are very limited in nature and extent within the HMAs. This adds to their importance. Within the HMAs, as elsewhere on the public lands, riparian areas are extremely important components of the landscape, providing essential habitat requirements to a wide variety of consumptive and non-consumptive uses of the public lands. Included are forage, cover, water, breeding and rearing areas, and numerous essential hydrologic functions.

Riparian areas are important enough to warrant special policy and management considerations. The BLM policy with regard to riparian areas on public lands under its jurisdiction is for all riparian areas that are not currently properly functioning to be changed to proper functioning condition through application of appropriate management and to ensure that riparian areas that are properly functioning are maintained in their present condition.

Within the Adobe Town HMA, natural water sources are sparse. Stream segments with perennial flow characteristics are rare and often have upstream and downstream segments that are ephemeral. Commonly, duration of stream flow is ephemeral; streams flow only in response to precipitation events and spring snowmelt.

In the Salt Wells Creek HMA there are around 186 miles of perennial and intermittent streams on public lands. They range from high mountain, high gradient, headwater streams to lower elevation, low gradient, desert streams.

It must also be noted that early settlement concentrated in these limited riparian areas. In addition to their natural values, riparian areas often are rich in historical and cultural values. A large percentage of the total riparian resource within the HMAs is privately-controlled.

Riparian Assessment

The BLM method for determining the condition of riparian areas is named Proper Functioning Condition (PFC). It is conducted by an interdisciplinary team composed of professional specialists employed by the land management agency. Thus, Proper Functioning Condition is a desirable condition and the name of a federal inventory procedure. Riparian areas are said to be *properly functioning* if adequate vegetation, landform or woody debris are present to dissipate water energy associated with high stream flow. Condition ratings of these riparian areas have shown that 42% (78.9 miles) are in proper functioning condition and thus meet the Standards for Healthy Rangelands while the remaining 58% (107.5 miles) do not. Data sheets for every stream are in RSFO files.

General Description of the Physical Hydrologic Regime for the Adobe Town HMA

The HMA is completely contained within the Colorado River Basin via the Little Snake River drainage.

Water Balance

Precipitation ranges from 8-18 inches per year in the HMA. Net potential evapotranspiration is 20-22 inches, resulting in a net annual water balance (deficit) of 2-14 inches. This makes the relative lack of abundance of water in the HMA a critical limiting factor for animal survival.

Stream flow

The majority of the streams in the HMA are ephemeral in nature, transporting water only in response to runoff from storm events. These ephemeral drainages do not have active flow for long enough to develop riparian vegetation communities. A few isolated stream segments have some perennial flow and support small riparian vegetation communities. These are quite limited and typically associated with springs and seeps that are widely distributed along these otherwise desert channels.

Shell Creek, in the western portion of the HMA has some reaches with perennial flow in most years, and a substantial riparian community and associated terraces, although the percent of the stream channel that is on public land is small (less than two miles through the entire creek length). Springs form on the east side of the Kinney Rim and result in isolated lentic riparian areas that total less than 20 acres. Similarly, lentic riparian areas develop along the north face of the Powder Rim. Channelized flow downstream of these springs and seeps typically continues for less than 1/16th mile before infiltrating and being lost to subsurface flow.

The Sand Creek drainage, including Willow Creek and Skull Creek, is the most extensive in the HMA. It is primarily ephemeral with many impassable crossings during spring run off and after the violent thunderstorms that can occur throughout the summer season. Horses routinely dig in the deep sands to locate and perpetuate water sources that would otherwise be unavailable to them or to other animals.

General Description of the Physical Hydrologic Regime for the Salt Wells Creek HMA

The main perennial channels that drain the Salt Wells Creek HMA include Salt Wells Creek Bitter Creek, Vermillion Creek, and a portion of Sage Creek, all of which are contained within the Colorado River Basin.

Water Balance

Based on data from the online Wyoming Climate Atlas (http://www.wrds.uwyo.edu/wrds/wsc/climateatlas/title_page.html), precipitation in the Salt Wells Creek HMA ranges from 6-15 inches per year. Net annual potential evapotranspiration is 40-50 inches. This results in a net annual water balance (deficit) of 25-44 inches. The relative lack of abundance of water in the HMA is a critical limiting factor for both plant animal survival.

Stream flow

The majority of the channels in the Salt Wells Creek HMA are ephemeral (flowing only in response to storms or snow melt) in nature. These ephemeral drainages do not have active surface or near surface flows for long enough times to develop riparian vegetation communities. Salt Wells Creek, Vermillion Creek, and Sage Creek have a wide variety of conditions along their lengths but are predominately fully developed, "Properly Functioning," riparian communities. The Bitter Creek channel is adjusting to past disturbances. What riparian areas do exist are intermittent and isolated. This creates a "Functional At Risk," rating for the majority of the length of Bitter Creek.

Other Surface Water Resources

A significant portion of the HMAs (>60%) lack reliable, season-long water sources. This area is, because of this characteristic, important winter range to wildlife, wild horses, and domestic livestock. Water in this area consists of natural, ephemeral stream flows, widely scattered springs and seeps, and a few very old reservoirs. Most of these reservoirs are located at springs or seeps and could be classified as spring developments. These characteristics combine to limit the carrying capacity of the area for season-long use by any kind of grazing animal to much less than could be supported by the available forage resource. (Evaluation and EA# 122, pgs 6-9.)

J. PRIVATELY-OWNED AND CONTROLLED LANDS
TABLE 9

HMA	PRIVATELY CONTROLLED	PERCENT OF HMA
Adobe Town	30,000	6.7%
Salt Wells	480,308	41.0%

Privately-owned or controlled lands comprise 6.7% in the Adobe Town HMA and 41% in the Salt Wells Creek HMA. In addition to their proportionate contribution to the forage and space requirements for all the animals that utilize the HMAs, a disproportionately high share of the reliable water sources in the HMAs occur on these lands. Lands in the Rock Springs Field Office area include BLM-administered public land, lands managed by other Federal agencies, State land, and private land. The Rock Springs Field Office area contains a substantial acreage of checkerboard lands (railroad grant lands where private and public land occur in alternating sections for 20 miles on either side of the railroad which crosses Wyoming from east to west). Lands north and south of the checkerboard are predominantly solid block, BLM administered public land. There is no fencing between the checkerboard and solid block public land.

Checkerboard lands create special problems for managing wild horses. A court decision specifically addresses management of these lands. The location of private lands throughout the Rock Springs Field Office area affects wild horse management on public lands, in part, because private lands are not fenced from public lands.

K. SOCIOECONOMICS

The other uses of the public land within the HMA yield a variety of direct and indirect economic benefits, and the public rangelands are an important aspect of the sense of place that is the essence of the West. For the purpose of this analysis, the regional and national impacts are not quantified. Locally, the analysis area serves many purposes to the local, regional, and national populations. The primary direct effects are local in nature. As with other values/effects, the socioeconomic values need not be mutually exclusive. Maintaining a mix is consistent with the direction of the Act to maintain the multiple use relationship that presently exists within the areas. The following list represents the multiple use relationship that currently exists within and adjacent to the HMA.

PUBLIC LAND USE	ECONOMIC VALUES	CULTURAL VALUES
Wild horse habitat	recreation, adoption	lifestyle, character
Livestock raising	meat, fiber, jobs	lifestyle, character
Big game hunting	meat, recreation, jobs	lifestyle, self reliance
Dispersed recreation	indirect expenditures	lifestyle, freedom
Energy Production	royalties, employment, energy	lifestyle, independence

IV. ENVIRONMENTAL CONSEQUENCES

A. INTRODUCTION

Resources impacted by the Proposed Action include wild horses, domestic livestock and wildlife, vegetation and soils, lands, socioeconomics and recreation. The direct, indirect, and cumulative impacts are addressed for each resource.

This section will assess the environmental impacts (either positive or negative) on the components of the human environment either affected or potentially affected by the Proposed Action and Alternative. Direct impacts are those that result from the actual gather and removal of wild horses in the Adobe Town and Salt Wells Creek HMAs. Indirect impacts are those impacts that exist once the excess animals are removed. By contrast, cumulative impacts result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such actions. Cumulative impacts can result from individually minor but

collectively significant actions taking place over a period of time. Critical elements of the human environment (USDI-BLM 1988) and their potential to be affected by the Proposed Action and Alternatives must be considered. These critical elements are listed below in Table 3. The elements that are determined to be not affected will not be analyzed or discussed further in this document.

Table 10 - Critical Elements Checklist

Critical Elements	Status	Analyzed in Detail in this EA
Cultural/Historic	Potentially Affected	Yes
Native American Religious Concerns	Potentially Affected	Yes
Wilderness	Potentially Affected	Yes
Wetlands/Riparian Areas	Potentially Affected	Yes
Invasive Species	Potentially Affected	Yes
ACEC	Not Affected	No
Air Quality	Not Affected	No
Farmland, Prime/Unique	Not Present	No
Wastes, Hazardous, Solid	Not Present	No
T&E Species	Not Affected	
Water Quality	Not Affected	No
Floodplains	Not Present	No
Environmental Justice	Not Present	No
Wild & Scenic Rivers	Not Present	No
Other Resource Elements		
Wildlife	Potentially Affected	Yes
Wild Horses	Potentially Affected	Yes
Livestock Grazing	Potentially Affected	Yes
Vegetation	Potentially Affected	Yes
Soils	Potentially Affected	Yes
Recreation	Potentially Affected	Yes
Riparian	Potentially Affected	Yes
Private Lands	Potentially Affected	Yes
Socio Economics	Potentially Affected	Yes
Fluid or Solid Minerals	Not Affected	No
Visual Resource Management	Not Affected	No

ENVIRONMENTAL IMPACTS ON SPECIFIC COMPONENTS OF THE ENVIRONMENT

B. WILDLIFE

Wildlife General

The following impacts may occur to wildlife species under the Proposed Action and Alternative 2. There would be no wild horse gatherings implemented in Alternative 3; therefore, there would be no impacts to wildlife resulting from wild horse gathering operations. However, negative impacts to wildlife from unmanaged wild horse populations would continue or increase. Gathering wild horses, whether it be for adoption, emergency control, and/or fertility control, involves setting up wild horse traps, using saddle horses and helicopters to gather the horses, and trucks to transport them to a holding facility in preparation for adoption.

A significant part of the project area is located within crucial big game crucial winter range(s). Activities potentially disruptive to wintering big game are avoided within crucial winter range from November 15 to April 30. This project will not be implemented during that time frame.

Project activities outside the seasonal restrictions would cause animals to temporarily vacate the area where gather operations are occurring. Such displacement would be brief and localized and big game species would return to the area after activities cease.

Environmental Consequences Of Alternative 1 & 2

Under these alternatives, the horses left on the range would have adequate forage, water, and space. Wildlife species would be able to live in a natural ecological balance within the HMAs and adjacent to it. Improved quality and increased quantity of forage would help to obtain or maintain objective wildlife populations as defined by the Wyoming Game and Fish Department.

Wildlife populations in areas where excess wild horses are gathered could be disrupted for a short time during the gathering operations. Once gathering operations cease, these effects would stop. The short-term effects are a result of human presence and the noise of the helicopter which may cause wildlife to seek cover in areas away from gathering routes. However, large game species should return to the area within a few days. Capture activities would not cause abandonment of normal habitat areas. There would be no long-term adverse effect on wildlife.

BLM data and past experience show that removal of excess horses from areas of wild horse concentration would improve habitat conditions for wildlife. This effect would be most pronounced around water sources and would benefit both game and non-game wildlife. Maintaining wild horse populations at AML through the removal of excess wild horses enables wildlife populations to utilize the forage that would otherwise be used by the excess wild horses. No adverse cumulative impacts to wildlife are anticipated.

Environmental Consequences Of Alternative 3

Unmanaged populations of wild horses might eventually stabilize at very high numbers near what is known as their food-limited ecological carrying capacity. At these levels, range conditions would deteriorate significantly. Due to the lack of large predators to limit population growth in the HMA, wild horse numbers would eventually exceed the carrying capacity of the HMA and adjacent areas. Competition for water sources and forage resources would increase between wildlife species, specifically pronghorn and mule deer. Inter specific competition over time would affect pronghorn and mule deer, especially in crucial winter ranges. Large game species would be displaced over time and population levels and overall health of the herds would diminish.

Sensitive Species Wildlife

Impacts would be the same under Alternatives 1 & 2 and are detailed as follows: Horse gather operations would occur outside of critical time frames or habitat locations for certain species such as the greater sage-grouse, mountain plover, white tailed prairie dogs and raptors; species which are documented to occur in the project area. Removal of vegetation from sensitive sagebrush and riparian habitats will be avoided. With timing and avoidance limitations, no impacts to these species are anticipated. Under Alternative 3, there would be no surface disturbing activities and therefore no impacts deriving from them. Impacts under this alternative would be associated with the deterioration of habitat conditions that would result from high horse numbers.

The following list indicates sensitive species identified within the project area for which seasonal/avoidance stipulations are applied. The dates shown include the earliest start and the latest stop for both field office jurisdictions. The proposed project is not scheduled to begin until after all seasonal/avoidance stipulations have expired.

Raptor Species:

Golden eagle and ferruginous hawk nests: Disruptive activities restricted within 1 mile, Feb 1-July 31. All other identified raptor nests: Disruptive activities restricted within ½ mile, March 1 - July 15.

Greater sage-grouse:

Sage-grouse leks: 1) Avoid surface disturbance or occupancy within ¼ mile of the perimeter of occupied sage-grouse leks. 2) Avoid human activity between 8 p.m. and 8 a.m. from March 1 - May 15 within ¼ mile of the perimeter of occupied sage-grouse leks.

Sage-grouse nesting/early brood-rearing habitat: Avoid surface disturbing and disruptive activities in suitable sage-grouse nesting and early brood-rearing habitat within two miles of an occupied lek, or in identified sage-grouse nesting and early brood-rearing habitat outside the 2-mile buffer from March 15 - July 15.

To reduce impacts to greater sage-grouse in the Adobe Town HMA, construction and other activities potentially disruptive to strutting and nesting greater sage-grouse will be prohibited between March 1 and June 30 for the protection of greater sage-grouse nesting areas.

Mountain plover:

Disruptive activities restricted from April 10 - July 10.

White-tailed prairie dog:

Construction of facilities, traps and staging locations will not occur within 50 feet of any active prairie dog town.

C. CULTURAL, HISTORIC RESOURCES

Environmental Consequences Of Alternative 1 & 2

Cultural resources would not be impacted as all potentially surface-disturbing activities would be subject to cultural clearance and mitigation practices.

Environmental Consequences Of Alternative 3

There would be no gathering or other handling and, therefore, no adverse effects associated with the construction of traps or other facilities. Increased numbers of horses would trample an unknown number of sites.

D. WILD HORSES-Environmental Consequences

Environmental Consequences Of Alternative 1

The Wild Free-Roaming Horse and Burro Act of 1971 (Public Law 92-195 as amended) states that all management activities shall be at the minimum feasible level. The minimum feasible level of management would require that removals and other management actions that directly impact the population, such as helicopter census, occur as infrequently as possible (3 to 5 years). To the extent practical, these alternatives would allow maintenance of a self sustaining population, as well as maintaining a thriving natural ecological balance.

Reducing the wild horse population in the Adobe Town HMA to 525 mature horses and in the Salt Wells Creek HMA to 251 mature horses would meet the intent of the Wild Free Roaming Horse and Burro Act that all management actions shall be at the minimum feasible level. The following positive impacts for wild horses and their habitat would occur:

- A thriving natural ecological balance would be achieved and maintained by reducing the population to the lower limit of the management range.
- The wild horses remaining on the range would experience decreased competition and stress for available resources.
- Ensure that a viable population of wild horses would survive, and be successful during poor years when elements of the habitat are limiting due to severe winter conditions, drought or other uncontrollable and unforeseeable environmental influences to the herd.
- Annual gathers would not be required which would allow for a greater level of herd stability and band integrity.
- Gathers would occur when the population approaches or exceeds the upper limit of the management range, anticipated to be every 3 years.
- The wild horse population would be subjected to the stresses associated with gathering and handling as infrequently as possible.

Environmental Consequences Of Selective Removal Criteria

Direct impacts associated with Alternative 1 would consist of selecting wild horses for release that possess the historic characteristics (color, pattern, conformation, etc.) and age structure that are typical of the herd demographics of the Adobe Town and Salt Wells Creek HMAs. The National Selective Removal Policy (described in Alternatives Analyzed Section) would be followed to the extent possible. Animals selected for release would be the most capable of surviving environmental extremes, thus ensuring a viable population is present in the HMAs. Utilizing the selective removal criteria would result in a positive impact for the long term health and stability of the population.

The effect of removal of horses from the population is not expected to have significant impact on herd population dynamics, age structure or sex ratio, as long as the selection criteria for the removal maintains the social structure and breeding integrity of the herd. The selective removal strategy for the Adobe Town and Salt Wells Creek HMAs would maintain the age structure, the sex ratio and the historic range of characteristics currently within the herd. This flexible procedure would allow for the correction of any existing discrepancies in herd dynamics, which could predispose a population to increased chances for catastrophic impacts. Further detail on these criteria and their probable impacts to the resulting population are found in Appendix A.

Potential negative impacts to the long term health and stability of the population could occur from exercising poor selection criteria not based on herd demographics and age structure. These negative impacts would include modification of age or sex ratios to favor a particular class of animal. Effects resulting from successive removals causing shifts in sex ratios away from normal ranges are fairly self evident. If the selective removal criteria favor studs over mares, it would be expected to result in decreased band size, increased competition for mares, and an increase in the size and number of bachelor bands. If the selective removal criteria favor mares over studs, it would be expected to result in fewer and smaller bachelor bands, decreased competition for mares, and a likelihood of larger band sizes.

Environmental Consequences Of Gather Operations

These direct impacts include: handling stress associated with the gathering, processing, and transportation of animals from gather sites to temporary holding facilities, and from the temporary holding facilities to an adoption preparation facility. The intensity of these impacts varies by individual, and is indicated by behaviors ranging from nervous agitation to physical distress. Mortality does occur during a gather however it is infrequent and typically is no more than one-half to one percent of the total animals gathered. Traumatic injuries that may occur typically involve biting and/or kicking which results in bruises and minor swelling but normally does not break the skin. These impacts occur intermittently and the frequency of occurrence varies with the individual.

Population wide impacts may occur during or immediately following the implementation of Alternative 1. They include the displacement of bands during capture and the associated re-dispersal, temporary separation of members from individual bands of horses, re-establishment of bands following release, and the removal of animals from the population.

With the exception of the changes to herd demographics, direct wide population impacts have proven to be temporary in nature with most if not all impacts disappearing within hours to several days of release. No observable effects associated with these impacts would be expected within one month of release except for a heightened shyness toward human contact. Observations of animals following release have shown horses relocate themselves back to their home ranges within 12 to 24 hours of release. A recent study by Hansen, Montana State University, found that removals as conducted by the BLM in herds under the jurisdiction of the Lander (Wy) and Idaho BLM, had no adverse effects on the reproduction rates of those herds. The removal methods employed were the same as those proposed.

All activities would be carried out in accordance with current BLM policy, with the intent of conducting as safe and humane a gather as possible.

Environmental Consequences Of Data Collection

Direct impacts associated with data collection involve increased stress levels to the animals as they are restrained in the portable squeeze chute. Those animals selected for blood sampling may become very agitated as the samples are drawn. Once the animal is released from the squeeze chute, stress levels decrease rapidly. The collection of data is a positive impact to the long term management of the population. This data would be used to develop population specific objectives that would help to ensure the long term viability of the population. This procedure is within the intent of the Act, as it relates to managing populations at the minimum feasible level.

The direct impacts of the Proposed Action would include capturing approximately 1300 wild horses, returning approximately 525 mature horses to the Adobe Town HMA, and removing the remainder of the horses. The direct impacts of the Proposed Action would include capturing approximately 480 wild horses, returning approximately 250 mature horses to the Salt Wells Creek HMA, and removing the remainder of the horses. Direct impacts associated with the Proposed Action also include potential changes to herd demographics, and stress associated with gathering. The effect on herd demographics was discussed in the Selective Removal Criteria section, and the stress associated with gathering was discussed under Gather Operations.

Implementation of the Proposed Action would prevent the population from increasing beyond the upper limit of the management range until the third year, 2008. Gathering to the lower limit of the management range (600 adult horses in the Adobe Town HMA and 251 adult horses in the Salt Wells Creek HMA) would allow the wild horse population to increase over time to the upper limit of the management range (800 Adobe Town HMA and 365 adult horses Salt Wells Creek HMA). When this level is exceeded, another gather would be scheduled. Because the HMA would be gathered again when the upper limit of the management range is exceeded, resource degradation associated with wild horses would be minimized. Under the Proposed Action, horses left on the range would have adequate forage, water and space.

A thriving natural ecological balance would exist within the HMA and adjacent to it. Reducing the population to 600 mature horses in the Adobe Town HMA and 251 in the Salt Wells Creek HMA would benefit the remaining horses by improving the quality and quantity of forage. This would ensure a vigorous and viable breeding population, reduce stress on vegetative communities and wildlife, and be in compliance with the Wild Free Roaming Horse and Burro Act, and the Great Divide and Green River Resource Management Plan. Reducing the wild horse population to 600 and 251 mature horses would also maintain the wild horse population above the level that Dr. Cothran indicated would preserve the genetic diversity of the Adobe Town and Salt Wells Creek wild horse herds.

Environmental Consequences Of Alternative 2: Removal of Excess Horses From the Adobe Town and Salt Wells Creek HMAs and administration of Fertility Control to selected mares

The environmental impacts from this alternative would be the same as those from Alternative 1 in 2005. In addition, the amount of additional handling required after capture and before release to select and isolate the mares that would receive fertility control would result in some additional stress and opportunity for injury in 2005. This would be proportionate to the number of animals selected for treatment.

Fertility control effects can be broken into three areas for discussion. Those three would be: the effects of fertility control on the individual animal treated; the effects of fertility control on the band/group in which the treated animal lives; and the effects of fertility control on the whole population or herd (demographic analysis). Another area of interest lies in the possible future effect of fertility control on population management requirements (when and how big will the next gather be? How about adoption demand? Are just some of the questions that come to mind). While clearly not environmental in nature, these are still important considerations in planning for the future of any population of wild, free roaming horses or burros on public land. The use of fertility control represents an expense that may well be recouped in the form of lower future costs of management.

The Effects Of Fertility Control On The Individual Animal Treated

Treated mares would be subjected to the additional handling required in order to receive the vaccine. They would be slightly at risk for allergic reactions and/or injection site infections/reactions. They would be spared the stress of pregnancy and lactation if the treatment were successful. Typically, mares treated in August of 05 would already be pregnant if they were healthy and receptive and have a colt in the spring of 2006. They would then have an 82% chance of not getting pregnant in 2006 and a 68% chance of not getting pregnant in 2007 (based on observed titer levels produced in trials by the vaccine currently available). Depending on their age and environmental conditions during that period, they could grow bigger and stronger than they otherwise would while carrying and raising two colts. This could result in their living longer and extend their young bearing years. While this result is very possible, it would be quite variable, depending on the individual animals. The vaccine under consideration does not alter the reproductive tract itself in any way and has no lasting effect on an individual animal's ability to become pregnant. If a mare was treated that was not already bred (such as a late foaler or maturing filly), she would have a 98% chance of not getting pregnant in 2005 and be less likely to have a colt born unusually early or late in the following years.

The Effects Of Fertility Control On The Band/Group In Which The Treated Animal Lives

Successfully treated mares would not become pregnant and have colts but their estrous cycle would continue regularly. They would continue to demand attention from the harem stallion. This could have an adverse effect on him, causing him to enter the winter in lower physical condition than he otherwise would and thus render him more likely to succumb to adverse environmental conditions the following winter. The social structure of the harem band is dependant on the periodic birth of young animals. It is not, however, known just how many young is "enough" to insure a stable social structure in a population. Thus, it is reasonable to predict that as long as some colts are born each year, the band structure will continue relatively unaffected.

The Effects Of Fertility Control On The Whole Population Or Herd (Demographic Analysis)

This is the best understood and most often discussed effect of fertility control on wild horse populations. The use of fertility control would change the wild horse population demographics, over time as reproduction is first suppressed then returns to normal as the immunity afforded by the vaccine diminishes. The degree of change observed in the years after 2005 would vary with the rate of application and the success of the vaccine used in 2005. Those changes would be seen in the population size and makeup in future years. In order to array those possible changes, the tools and methods described in Appendix 1 of the gather plan were used to project and compare the response of the population size to two possible fertility control scenarios and them to a control (no fertility control applied at gather time). They were the most likely population size that would be encountered in the summer of 2008 if the population were adjusted to the target size and makeup in the summer of 2005. The three scenarios to be compared are that 2008 population if no mares were selected for fertility control treatment in 2005, if $\frac{1}{2}$ of the mares released in 2005 were administered fertility control, and if all the mares released in 2005 were administered fertility control. Treating one half of the released mares was selected for comparison as that is an estimate of the percentage of returned mares that might be designated for fertility control under a management strategy designed to maintain or increase the frequency of the occurrence of the Spanish Colonial genotype in this population. Then, the most likely (average) 2008 population was projected out to 2011 using the same methods. The results for the two herds are shown in the following table:

ADULT** POPULATION SIZES IN THE HMAS; FERTILITY CONTROL OPTIONS COMPARED				
Treatment Scenario (Treatment administered in 2005 Only)	Highest Possible Population in 2008	Lowest Possible Population in 2008	Most Likely Population In 2008	Most Likely Population In 2011 if No gather in 08
ADOBE TOWN HMA				
No Fertility Control	879	437	667	752
½ of released mares	810	426	622	672
All of released mares	741	414	577	596
SALT WELLS CREEK HMA				
No Fertility Control	696	532	532	633
No Action	688	509	509	613
All of released mares	632	494	494	538

** In addition, the number of colts in 2008 could range from the highest possible of 226 to the lowest possible of 34 and the most likely of 171 to 47 (193 in 2011) in the Adobe Town HMA and from the most likely of 78 to 21 (105 in 2011) in the Salt Wells Creek HMA.

The above table reveals an interesting fact peculiar to the Adobe Town and similar populations that can often expect low survival rates for the very young (0, 1, and 2yr olds): The total population size is more dependant on the environmental factors affecting survivability than on the artificial manipulation of the birth rate provided by fertility control. And, further, that large populations such as this can 'weather the storm' of a less than perfect management decision without facing the possibility of extinction that would represent a very real threat to a smaller population.

A number of possible effects of fertility control have been identified but not studied adequately enough to be able to predict their role in the highly variable population dynamics that typify wild horse populations. Compensatory reproduction and an individual animals reproductive success following treatment are examples.

As long as fertility control was administered in conjunction with gathers planned for population management, there would be little or no cumulative effects unless and until a vaccine were developed that had a longer period of efficacy than the management gather cycle.

Environmental Consequences Of Alternative 3

Under this alternative, horses would not experience the stress associated with gathering, removal or adoption. The current population of wild horses would continue to increase, and exceed the carrying capacity of the range. Though it may require many years for the population to reach catastrophic levels, by exceeding the upper limit of the management range, this alternative poses the greatest risk to the long-term health and viability of the wild horse population, wildlife populations, and the vegetative resource.

The population of wild horses would compete for the available water and forage resources. The areas closest to water would experience severe utilization and degradation of the range resource. Over the course of time, the animals would deteriorate in condition as a result of declining forage availability and the increasing distance traveled between forage and water sources. The mares and foals would be affected most severely. The continued increase in population would eventually lead to catastrophic losses to the herd, which would be a function of the available forage and water and the degradation of the habitat. A point would be reached where the herd reaches the ecological carrying capacity and both the habitat and the wild horse population would be critically unhealthy.

Ecological carrying capacity of a population is a scientific term, which refers to the level at which density-dependant population regulatory mechanisms would take effect within the herd. At this level, the herd would show obvious signs of ill fitness, including poor individual animal condition, low birth rates, and high mortality rates in all age classes due to disease and/or increased vulnerability to predation (Coates-Markle, 2000).

In addition, irreparable damage would occur to the habitat through overgrazing, which is not only depended upon by wild horses but by wildlife (which include sensitive species), and permitted livestock. All multiple uses of the area would be impacted. Significant loss of wild horses in the HMAS due to starvation and disease would have obvious

consequences to the long-term viability of the herd. Irreparable damage to the resources, which would include primarily vegetative, soil and watershed resources, would have obvious impacts to the future of the HMAs and all other uses of the resources, which depend upon them for survival.

This alternative would not be acceptable to the BLM nor to most members of the public. The BLM realizes that some members of the public advocate "letting nature take its course", however allowing horses to die of dehydration and starvation would be inhumane treatment and would clearly indicate that an overpopulation of wild horses existed in the HMAs. The Wild Free-Roaming Horse and Burro Act of 1971, as amended, mandates the Bureau to "prevent the range from deterioration associated with overpopulation", and "remove excess horses in order to preserve and maintain a thriving natural ecological balance and multiple use relationships in that area". Additionally, Code of Federal Regulations at Title 43 CFR 4700.0-6 (a) state "Wild horses shall be managed as self-sustaining populations of healthy animals in balance with other uses and the productive capacity of their habitat".

E. DOMESTIC LIVESTOCK

Environmental Consequences Of Alternative 1 & 2

An expected improvement in the quality and quantity of forage availability is expected where excess or strayed wild horses are removed. This would provide greater opportunity for improved range conditions within the related areas. A complete analysis of livestock grazing and grazing impacts in this area is found in the Divide Grazing EIS. Grazing in this area is also addressed in the Great Divide RMP and the Green River RMP.

Livestock owners would be notified that wild horse population control operations are planned. The possibility exists that domestic livestock would be spooked by wild horses and/or the helicopter. In this situation, livestock would be subject to short-term stress and possible injury.

Environmental Consequences Of Alternative 3

Under Alternative #2, wild horse population control methods would not be implemented. This alternative would allow wild horse populations to increase within the Adobe Town and Salt Wells Creek HMAs and nearby areas. Livestock would gradually be displaced by wild horses as demand for space, forage, and water increased. Displacement would be slow and indirect. As competition increased, it would become less economically favorable to utilize these areas with domestic livestock. Fence maintenance costs would increase. This would have a negative economic impact on livestock producers. Range conditions throughout the area would deteriorate. These impacts would be cumulative over time.

F. VEGETATION AND SOILS

Vegetation General

Environmental Consequences Of Alternative 1 & 2

The removal of excess wild horses from inside the two wild horse HMAs would avoid potential over-utilization of forage and reduction in vegetative ground cover. The quantity of forage throughout the HMAs could be increased. Impacts from wild horses could diminish and be beneficial. Vegetation composition, cover, and vigor could improve or be maintained near water sources where wild horses tend to congregate. An improvement in forage condition could lead to improved livestock distribution, which would prevent over-utilization and reduction in vegetation cover. Vegetative diversity and health should improve in areas where excess wild horses are removed. Adverse, short term effects to vegetation and soils would occur at trap sites when gathers are being conducted. Vegetation would be disturbed by trap construction, and short term trails and soil compaction may develop near and in the trap. Any vegetation removed would be minimal and localized.

Environmental Consequences of Alternative 3

Under Alternative 3, wild horse population control methods would not be implemented. Perennial vegetation would continue to experience season-long grazing pressure, which is not conducive to optimum plant health and vigor. Soil erosion and plant health would continue to be compromised around water locations, but elsewhere impacts would be localized and minimal. This alternative would allow wild horse populations to increase within the HMAs and nearby areas. As native plant health deteriorated and plants were lost, soil erosion would increase and a long term loss of productivity would occur. There would also be increased impacts to areas outside the HMAs as horses move out in search of better forage. Impacts would be cumulative over time and would affect areas beyond the HMA. There would be no impacts from trapping operations because none would occur.

Soils-General

Environmental Consequences Of Alternatives 1 & 2

Sheet and rill erosion would not exceed natural levels for the sites because the maintenance of AMLs would help ensure that a natural ecological balance would be maintained in and adjacent to the HMAs. Perennial vegetation would continue to experience season-long grazing pressure, which is not conducive to optimum plant health and vigor. Soil erosion and plant health would continue to be compromised around water locations, but elsewhere impacts should be minimal. Watershed health should improve throughout much of the area.

Environmental Consequences Of Alternative 3

Soil erosion would increase in proportion to herd size and vegetation disturbance. The shallow desert topsoils can not tolerate much loss without losing productivity and thus the ability to be revegetated with native plants. Invasive non-native species could increase following increased soil disturbance and reduced native plant vigor and abundance. The greater impacts would be around water locations. Watershed health throughout the area would continue to decrease. These impacts would be cumulative over time.

Special Status Plants

Environmental Consequences Of Alternative 1 & 2

Ute ladies'-tresses occurs in riparian areas. The gather operations in alternative 1 would not be in any area that would contain the necessary habitat for this species and so there would be a No Effect for this species. All existing sites for horse gather operations have been surveyed for special status plant species and have been cleared. If any other sites are proposed they will be surveyed and cleared before operations begin. There should not be any impacts to sensitive species as a result of implementing the Proposed Action since site specific analysis will be completed if surface disturbing activities will occur.

Environmental Consequences Of Alternative 3

This alternative would allow wild horse populations to increase within the Adobe Town and Salt Wells Creek HMAs and nearby areas. Under this alternative, no gathering would take place inside or outside of the HMAs. Populations of wild horses might eventually stabilize at very high numbers near what is known as their food-limited ecological carrying capacity. At these levels, range conditions would probably deteriorate significantly which would affect the native species and the habitat for special status species.

Weeds

Environmental Consequences Of Alternative 1 & 2

The over-utilization of range resources and subsequent reduction in vegetative ground cover promotes the establishment and spread of invasive species. The removal of excess wild horses could aid in the curtailment of the introduction and spread of noxious weeds and other invasive species.

Environmental Consequences Of Alternative 3

Invasive non-native plant species could continue to increase and invade new areas following increased soil disturbance and reduced native plant vigor and abundance. This would lead to both a shift in plant composition towards weedy species and a loss of productivity from loss of native species and the erosion of soils. There would also be increased impacts to areas outside the HMAs as horses move out in search of better forage. Impacts would be cumulative over time and would affect areas beyond the HMA.

G. RECREATION

GENERAL

Recreation values are quite subjective. Those who wish to see wild horses might appreciate the increased viewing opportunities associated with increased herd sizes, so long as the condition of the horses remained good. Those who prefer other recreational activities that are degraded by an increase in the horse population might prefer to see smaller horse herds. Some might prefer to see no horses at all, particularly if they perceived that horses were using habitat that would otherwise be able to support greater numbers of native wildlife. Any change in the relative balance among species in the habitat is going to affect the quality of the recreational opportunities found in the HMA. The analysis below is based on the assumption that the public wants the balance of recreational opportunities available in the HMA to remain essentially unchanged from what it has been in recent years.

Environmental Consequences Of Alternative 1 & 2

Recreational opportunities would probably be unchanged, so long as environmental factors or disease did not significantly affect the herds.

Environmental Consequences Of Alternative 3

Where horse numbers increased, certain kinds of opportunities associated with the horse population would increase, although the condition of the horses could decline over time, rendering them less desirable for viewing. The quality of recreational opportunities associated with the quality of the habitat, such as viewing or hunting wildlife, would probably decline as the wild horse population increased beyond the carrying capacity of the habitat.

The quality of all recreational opportunities would decline, in the long-term. Some opportunities associated with the presence of wild horses might increase in the short term, but they would probably decline in the long-term due to the increasing occurrence of obviously malnourished horses. Recreationists would likely encounter carcasses and their scavengers more frequently when the population of horses is in decline due to insufficient feed and/or water. Thus, although the increased population of wild horses might make them easier for the recreationist to find, the experience might not be as desirable due to the poor condition of the horses.

Other recreation opportunities would also be detrimentally affected in the long run due to the habitat degradation caused by wild horse overpopulation. Game species might be pressured out of the area in search of essential resources. Viewers might not need to go to the HMA to view wild herds because the wild horses would be forced to expand their territories outside the current HMA boundaries in order to find the feed and water they need to survive. Once they establish themselves beyond the HMA boundaries, they would upset the balance among other species in the new habitat as they used resources required for the other species. Opportunities for viewing and hunting other wildlife could be severely reduced in the long run, both within the HMA and beyond it.

H. WILDERNESS

GENERAL

The Adobe Town Wilderness Study Area (WSA) is managed to preserve its wilderness character (naturalness, solitude, and opportunities for primitive recreation). Fundamental to this preservation is prohibition of new surface disturbance or permanent structures so that the WSA retains the character of an area untrammelled by man. Any impacts that degrade the naturalness of the WSA would impair its suitability for designation as wilderness,

therefore violating the nonimpairment standard of the Interim Management Policy. The presence of wild, free-roaming horses is part of the character of the WSA.

Environmental Consequences Of Alternative 1 & 2

The suitability of the WSA for wilderness designation would be unimpaired (not affected).

Environmental Consequences Of Alternative 3

Impacts of an increased wild horse herd size would decrease the naturalness of the WSA and therefore impair its suitability for designation as wilderness. Impacts on the naturalness of the WSA could come in many forms, primarily in the form of excessive erosion due to increased horse traffic and reduced soil stabilizing vegetative cover, and a change in the number of members of other species displaced by the increased competition for resources. If no gathers occurred, the horses might well expand their territories far beyond the HMA boundaries to get the resources they need, proportionately reducing their impacts on the WSA, but the herd would likely continue to occupy traditional territories until absolutely necessary, thus having a detrimental effect on the WSA in the short term as well as long-term.

I. RIPARIAN AREAS

Potential Effect on Riparian areas from Wild Horse Management

Direct Consequences

Overabundant grazing and browsing animals can detrimentally affect the condition of riparian areas due to overuse of riparian plants and physical damage caused by loitering. Specific impacts on riparian areas from animal use may include declining water quality from increased sedimentation, declining plant vigor, and decreased stream channel stability.

Indirect Consequences

Animal use can indirectly affect riparian condition through the removal of upland forage. When upland rangeland is adversely affected through the degradation of plant communities, nearby riparian areas are subjected to additional stress associated with increased run-off and sedimentation. If sufficient upland forage is removed, domestic and other grazing animals may then be forced to concentrate more in riparian areas to meet their foraging requirements. Increased utilization in riparian areas may induce plant species changes that increase the riparian grass component. This could increase the tendency for horses to select riparian areas for food. While horses do not typically loiter in riparian areas, choosing instead to visit them to drink and then quickly returning to upland areas, increases in their population levels would likely change this habit as it has been observed that domestic horses soon learn to tolerate the increased insect levels and unstable footing when confined to riparian areas.

Potential Effect on Riparian areas from Wild Horse Population Management Actions

In addition to the kinds of impacts identified above that would accrue from wild horse management in general, the action of gathering wild horses could potentially affect riparian areas. To avoid potential impacts and for a number of other reasons, traps are not located in riparian areas and thus gathers are unlikely to affect riparian ecosystems. Description of the methods used to select temporary trap sites and specific mitigation measures are included elsewhere in this document.

Environmental Consequences Of Alternative 1 & 2

Under these alternatives, the number of free-roaming horses would decline. Riparian areas would respond to the overall decrease in grazing pressure and the percentage of miles of lotic riparian habitat and acres of lentic riparian habitat in proper functioning condition would increase, over time. .

Environmental Consequences Of Alternative 3

This is the "natural" alternative and would result in population increases and decreases in response to favorable and unfavorable environmental and predator-prey relationships. Often these population swings can be dramatic and result in large population gains followed by catastrophic die-off. Habitat effects of this type of management would be the decline of riparian habitat when populations were maximum, followed by habitat recovery when horse populations declined. In the end, the extent that habitat could recover when

populations were low would contribute to the determination of the extent and timing of population recovery. Effects of this alternative are highly variable, and likely to have the most unpredictable outcomes

J. PRIVATELY-OWNED AND CONTROLLED LANDS

General

The effects of any particular alternative course of wild horse management upon privately-owned and controlled lands would fall into two categories. The first, environmental effects, would not be significantly different depending on the ownership or control of the land. A particular riparian area, for instance, would be affected in the same manner by a given level of wild horse use irrespective of its ownership or form of control. The second category would be a particular combination of legal and attendant socioeconomic aspects that would tend to be quite subjective and personal and might be called value. This category would comprise a range of factors associated with a property owner's rights to the enjoyment of whatever might comprise the value of that property. An important principle of our legal system provides for, under carefully prescribed conditions, that private property (or values associated with a particular piece of property) may be "taken" for public use, provided that the private owner is properly compensated and due process is employed. The Act did not authorize the taking of any privately-owned or controlled lands for use by wild horses. Thus, if a particular course of action (alternative) would result in the value of privately-owned or controlled property being adversely affected, the alternative would be legally unavailable as a course of action, in other words, the taking would not be authorized under current authorities.

Environmental Consequences Of Alternative 1 & 2

There would be no takings inside or outside of the HMA. Horse populations would be maintained at levels which would not deprive landowners of the productive value of their lands.

Environmental Consequences Of Alternative 3

All populations would expand without control. Horses would expand their range. Eventually all available forage would be consumed by horses, and takings would occur within the HMA and in adjacent areas.

SOCIOECONOMICS

With the exception of energy development, the present uses of the public lands within the HMA are quite interdependent since they all rely on the same mix of limited natural resources. These uses can all be optimized to varying degrees without adversely affecting other uses. For example, improved genetics in domestic livestock can improve the profitability of that endeavor without the increased consumption of any habitat component required for some other use. These uses can also compete with one another. For example, if livestock numbers were increased with positive effects to 10 livestock operators and their families, the supply of wild meat available from licensed sport hunting might decline with negative effects to 50 individual families.

Environmental Consequences Of Alternative 1 & 2

Under this alternative the BLM would employ the practices to gather wild horses to the lower Limit of the AMLs in the HMAs. AML would be attained in the year 2005 and maintained there after by the periodic removal of horses. The social, economic, and environmental consequences of this action would allow for the continuation of other resource uses at present levels. This would allow viable wild horse populations to reach established management levels, upon which removal would occur as wild horse numbers exceeded established management levels.

The regional impacts from this alternative would be minor.

The overall local social effects of this action would be minimal. Change to regional lifestyles and attitudes would be insignificant because most ranchers would continue operations much as they have before. It is expected that changes to the historical patterns of use in the area would be insignificant.

Environmental Consequences Of Alternative 3

Under this alternative, the BLM would rely on predation and environmental forces to establish and maintain self-regulating populations. This action would allow wild horses to exceed the recognized carrying capacity of the federal range and all domestic livestock grazing would have to be reduced to the point of possible elimination.

Adverse impacts would occur in those grazing allotments that are within or adjacent to the HMA. Removal or reduction of livestock grazing would impact grazing management flexibility and opportunities. When livestock grazing is eliminated to accommodate the additional forage demand from the expanding wild horse populations, the following impacts would probably result.

Elimination of livestock use from all public lands within the herd areas would not have a significant adverse impact on the national livestock industry. However, it would cause significant impacts to the local economy and substantial increases in operational costs for the affected permittee, for example, increased fence maintenance.

Livestock operators' dependency on other lands would increase if they elected or were able to stay in the livestock business. Herding would be required to move sheep and cattle to leased private or state lands, and this leased property would have to be fenced to prevent livestock from straying onto public land and to prevent horses from consuming available forage desired for livestock production or resource protection.

Some operators would be affected less than others, but many would be forced to seek additional sources of income. Some would not be able to continue their ranching operations without the public land forage.

The impacts to the regional economy from this alternative would be substantial. There would be a loss of employment associated with the potential changes to livestock operations in the HMA. Another impact would be the loss of property and sales tax revenues to the affected county.

An important consideration under this alternative relates to wildlife and recreation values. The elimination or near elimination of livestock from public lands in these areas would not lead to more stabilized wildlife populations because the livestock use would be replaced by horse use which would be less intensively-managed and regulated than the domestic livestock grazing that it replaced. In the long-term, under this alternative, wildlife values would decline noticeably. The forage competition that would occur with wild horses on public lands would force wildlife to eventually migrate to private lands. Recreation expenditures would be expected to remain stable for a time, then decrease to correlate with effects on the wildlife populations.

In a region that is predominantly agrarian, this alternative would present significant social impacts, serious enough to change the traditional ranching lifestyle.

Managing for a naturally-limiting wild horse population would not allow for continued implementation of management plans and management agreements. The benefits to wildlife, and watershed values that would normally accrue from permittee construction and maintenance of additional water management facilities would not be realized. In the short-term, the conditions of uplands and riparian areas would decline.

In the long-term, the rangeland conditions would stabilize once wild horse populations stabilize. This alternative would allow the least opportunity for resource management objectives for wild horses, wildlife, recreation, and livestock grazing.

V. MITIGATIVE MEASURES

Each alternative incorporates mitigation measures that have been developed through experience. For instance, whenever an alternative includes the use of traps to capture horses for any purpose, certain mitigative measures are routinely included. These include: no new roads will be constructed to trap sites and no blading will be allowed for roads or two track trails; no blading will be allowed for wing construction or corral construction; trap site selection will avoid sites where potential conflicts have been noted with other species or their habitat. Standard operating procedures include mitigation of adverse impacts that have been encountered. When soil conditions are wet

enough to result in irreversible or long-term damage, operations will be suspended until conditions permit proper use.

No additional mitigation has been proposed. To propose additional mitigation for the probable impacts identified with each alternative would blur the distinctions between alternative management strategies and render the analysis moot.

VI. RESIDUAL IMPACTS

Residual impacts are those left over at the conclusion of a particular course of action and that could not be avoided or further mitigated. Because no additional mitigation is proposed beyond that which would be inherent in a particular course of action, all of the impacts from a particular course of action identified would be residual. The degree of severity of a residual impact is often a function of time. To illustrate, moderate overutilization of a forage plant for a short period of time has little or no residual impact because a change in the level of use can be made before the forage plant's productive potential is reduced. Extended periods of moderate overutilization, on the other hand, will eventually reduce the productive potential of that plant and thus a residual impact (reduced production) would accrue after a time. If an action could conceivably be completed within a five-month period and logistical or other factors protracted the completion of the action, residual impacts might increase.

VII. CUMULATIVE IMPACTS

The Adobe Town and the Salt Wells Creek HMAs are not designated wild horse ranges. Herd management areas may also be designated as wild horse or burro ranges to be managed principally, but not necessarily exclusively, for wild horse or burro herds. The area analyzed contains a variety of resources and supports a variety of uses. There are a number of other BLM-conducted and authorized activities ongoing in and adjacent to the HMA. Any alternative course of wild horse management has the opportunity to affect and be affected by those activities. Most of those activities depend in one way or another on the maintenance of a healthy landscape. Further, wild horses are not unique to the Adobe Town and Salt Wells Creek HMAs. Thus, the impacts of a course of action pursued within the HMA may have effects on the national population or the well-being of the species as a whole. The following tables represent the probable cumulative impacts of the alternatives analyzed.

A. ALTERNATIVE 1 & 2

CUMULATIVE IMPACTS OF THE ALTERNATIVE ON:		
NATIONAL POPULATION	THRIVING NATURAL ECOLOGICAL BALANCE	MULTIPLE USE RELATIONSHIP
Stabilizing	Maintained	Preserved

B. ALTERNATIVE 3

CUMULATIVE IMPACTS OF THE ALTERNATIVE ON:		
NATIONAL POPULATION	THRIVING NATURAL ECOLOGICAL BALANCE	MULTIPLE USE RELATIONSHIP
Destabilizing	Not Maintained	Not Preserved